Wetherby Building Systems Limited
1 Kid Glove Road
Golborne Enterprise Park
Golborne
Greater Manchester WA3 3GS

Tel: 01942 717100 Fax: 01942 717101
e-mail: info@wbs-ltd.co.uk
website: www.wbs-ltd.co.uk

Agrément Certificate
09/4625
Product Sheet 3 Issue 2

WETHERBY EXTERNAL WALL INSULATION SYSTEMS

EPSITEC EXTERNAL WALL INSULATION SYSTEM FOR TIMBER FRAMED BUILDINGS

This Agrément Certificate Product Sheet(1) relates to the Epsitec External Wall Insulation System for Timber Framed Buildings, comprising expanded polystyrene (EPS) or enhanced EPS insulation boards mechanically fixed to steel spacer rails, or timber battens, with a reinforced basecoat and render finish. The system is suitable for use, with height restrictions, on the outside of sheathed timber framed structures of new or existing domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.

The assessment includes

System factors:

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review

KEY FACTORS ASSESSED

Section 1. Mechanical resistance and stability
Section 2. Safety in case of fire
Section 3. Hygiene, health and the environment
Section 4. Safety and accessibility in use
Section 5. Protection against noise
Section 6. Energy economy and heat retention
Section 7. Sustainable use of natural resources
Section 8. Durability

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 9 June 2023
Originally certificated on 12 April 2016

Hardy Giesler
Chief Executive Officer

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.

The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).

Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

The Certificate should be read in full as it may be misleading to read clauses in isolation.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

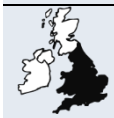
British Board of Agrément
1st Floor Building 3
Croxley Park, Watford
Herts WD18 8YG
tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that the Epsitec External Wall Insulation System for Timber Framed Buildings, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**A1**	**Loading**
Comment:		The system can sustain and transmit wind loads to the substrate wall. See section 1 of this Certificate.
Requirement:	**B3(4)**	**Internal fire spread**
Comment:		The system can contribute to satisfying this Requirement. See section 2 of this Certificate.
Requirement:	**B4(1)**	
Comment:		**External fire spread**
		The system is restricted by this Requirement. See section 2 of this Certificate.
Requirement:	**C2(b)**	
Comment:		**Resistance to moisture**
		The system provides a degree of protection against rain ingress. See section 3 of this Certificate.
Requirement:	**C2(c)**	
		Resistance to moisture
Comment:		The system can contribute to minimising the risk of interstitial and surface condensation. See section 3 of this Certificate.
Requirement:	**L1(a)(i)**	**Conservation of fuel and power**
Comment:		The system can contribute to satisfying this Requirement See section 6 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The system is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**7(2)**	**Materials and workmanship**
Comment:		The system is restricted by this Requirement. See section 2 of this Certificate.
Regulation:	**25B**	**Nearly zero-energy requirements for new buildings**
Regulation:	**26**	**CO_2 emission rates for new buildings**
Regulation:	**26A**	**Fabric energy efficiency rates for new dwellings (applicable to England only)**
Regulation:	**26A**	**Primary energy consumption rates for new buildings (applicable to Wales only)**
Regulation:	**26B**	**Fabric performance values for new dwellings (applicable to Wales only)**
Regulation:	**26C**	**Target primary energy rates for new buildings (applicable to England only)**
Regulation:	**26C**	**Minimum energy efficiency rating (applicable to Wales only)**
Comment:		The system can contribute to satisfying these Regulations, however, compensating fabric/services measures may be required. See section 6 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Fitness and durability of materials and workmanship**
Comment:		The system can contribute to a construction satisfying this Regulation. See sections 8 and 9 of this Certificate.

Regulation:	**8(3)**	**Fitness and durability of materials and workmanship**
Comment		The system is restricted by this Regulation. See section 2 of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	1.1	Structure
Comment:		The system can sustain and transmit wind loads to the substrate wall. See section 1 of this Certificate.
Standard:	2.4	Cavities
Comment:		The system can contribute to satisfying this Standard, with reference to clause 2.4.2(1)(2). See section 2 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The system is restricted by this Standard, with reference to clauses 2.6.4(1)(2), 2.6.5(2) and 2.6.6(2). See section 2 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The system is restricted by this Standard, with reference to clause 2.7.1(1)(2). See section 2 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system can contribute to satisfying this Standard, with reference to clauses 3.10.1(1)(2) and 3.10.2(1)(2). See section 3 of this Certificate.
Standard:	3.15	Condensation
Comment:		The system can contribute to satisfying the requirements of this Standard, with reference to clauses 3.15.1(1)(2), 3.15.4(1)(2) and 3.15.5(1)(2). See section 3 of this Certificate.
Standard:	6.1(b)	Energy demand and carbon dioxide emissions
Comment:	(c)(d)	The system can contribute to satisfying these Standards, with reference to clauses 6.1.1(1) and 6.1.2(2). See section 6 of this Certificate.
Standard:		Buildings insulation envelope
Comment:	6.2	The system can contribute to satisfying these Standards, with reference to clauses, or parts of, 6.2.1(1)(2), 6.2.3(1) 6.2.4(2), 6.2.6(1), 6.2.7(2), 6.2.8(1), 6.2.9(1)(2), 6.2.10(1)(2) and 6.2.11(1). See section 6 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:	(b)	The system can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. In addition, the system can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4(1), 7.1.6(1)(2), 7.1.7(1), 7.1.9(2) and 7.1.10(2). See section 6 of this Certificate.
Regulation:	**12**	**Building standards applicable to conversions**
Comment:		All comments given for the system under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1(1)(2) and Schedule 6(1)(2).

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	**23(1)(a)(i)(ii)(iii)(b)(i)(ii)**	**Fitness of materials and workmanship**
Comment:		The system is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**23(2)**	**Fitness of materials and workmanship**
Comment:		The system is restricted by this Regulation. See section 2 of this Certificate.

Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The system provides a degree of protection against rain ingress. See section 3 of this Certificate.
Regulation:	**29**	**Condensation**
Comment:		The system contributes to minimising the risk of interstitial condensation. See section 3 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		The system can sustain and transmit wind loads to the substrate wall. See section 1 of this Certificate.
Regulation:	**35(4)**	**Internal fire spread**
Comment:		The system can contribute to satisfying this Regulation. See section 2 of this Certificate.
Regulation:	**36(a)**	**External fire spread**
Comment:		The system is restricted by this Regulation. See section 2 of this Certificate.
Regulation:	**39(a)(i)**	**Conservation measures**
Comment:		The system can contribute to satisfying this Regulation. See section 6 of this Certificate.
Regulation:	**40(2)**	**Target carbon dioxide emission rate**
Regulation:	**43(1)(2)**	**Renovation of thermal elements**
Regulation:	**43(b)**	**Nearly zero-energy requirements for new buildings**
Comment:		The system can contribute to satisfying these Regulations. See section 6 of this Certificate.

Fulfilment of Requirements

NHBC Standards 2023

In the opinion of the BBA, the Epsitec External Wall Insulation System for Timber Framed Buildings, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*(1) 2023, Part 6 *Superstructure (excluding roofs),* Chapters 6.2 *External timber framed walls* and 6.9 *Curtain walling and cladding.*

(1) There is a general requirement in NHBC Standards 2023, Chapter 6.9, for fire-retardant-treated insulation to be used with the system in accordance with BS EN 13163 : 2012.

Fulfilment of Requirements

The BBA has judged the Epsitec External Wall Insulation System for Timber Framed Buildings to be satisfactory for use as described in this Certificate. The system has been assessed as an external wall insulation system, used to reduce the thermal transmittance (U value) of sheathed timber framed external walls, of new or existing domestic and non-domestic buildings, as described in this Certificate.

ASSESSMENT

System description and intended use

The Certificate holder provided the following description for the system under assessment. The Epsitec External Wall Insulation System for Timber Framed Buildings comprises EPS or enhanced EPS insulation boards, mechanically fixed onto steel spacer rails or timber battens attached to a sheathed timber framed structure. Either spacer rails or timber battens (placed at a maximum of 600 mm centres), are attached to the external surface of a minimum 11 mm thickness-oriented strand board (OSB), cement particle board (CPB) or plywood sheathing board and create a minimum 25 mm cavity (slightly ventilated and drained) when using timber battens, or a minimum 15 mm cavity when using steel spacer rails. The system is finished with a reinforced basecoat (incorporating glass fibre reinforcing mesh) and render (see Figure 1).

The system is suitable for use, with height restrictions, on the outside of external timber frames of new and existing domestic and non-domestic buildings.

Further details of the system components are given below:

Base rail profile

- base rail — a 2500 mm long aluminium base rail for fixing to the sheathing board, with 10 mm diameter drainage holes at 150 mm centres, 125 mm from each side of the edge, creating a drained and slightly ventilated cavity (with a ventilation rate of 588.5 mm^2 per metre length of wall)

Steel spacer rails

- epsitec spacer rail — 48 by 15.5 mm galvanized steel top-hat rail sections made from 0.6 mm thick DX51 Z275 galvanized steel in 2300 mm length through which the mechanical fixings pass to create the 15 mm cavity. Wider top hat sections can be used provided they have similar or better characteristics and have been approved by the Certificate holder

Insulation(1)

- EPS 70 insulation boards (white) —1200 by 600 mm, available in a range of thicknesses between 60(2) and 240 mm in 10 mm increments, with a nominal density of 15 $kg \cdot m^{-3}$, a minimum compressive strength of 70 $kN \cdot m^{-2}$ and nominal tensile strength of ≥ 100 $kN \cdot m^{-2}$. The boards are manufactured to comply with the requirements for EPS 70, Class E material to BS EN 13163 : 2012
- epsitherm EPS 70E and EPS 90E insulation boards (grey) — 1200 by 600 mm, available in a range of thicknesses between 60(2) and 240 mm in 10 mm increments, with a nominal density of 17 $kg \cdot m^{-3}$, a minimum compressive strength of 70 and 90 $kN \cdot m^{-2}$ respectively and nominal tensile strength perpendicular to the face of 100 $kN \cdot m^{-2}$. The boards are manufactured to comply with the requirements for EPS 70, Class E material to BS EN 13163 : 2012

(1) For declared thermal conductivity values (λ_D), see Table 5 of this Certificate.
(2) Lower thicknesses can be used on the reveals.

Mechanical fixings

- RAWL R-QCP-4550 Chipboard Screw — 4.5 mm diameter by 50 mm length screws for attaching the spacer rails or timber battens to the sheathing boards, installation depth of 18 mm
- self-drilling Ejot Saphir LS Range Screws — 5.5 mm diameter by 32 mm length screws, made of case-hardened carbon steel, with a Climadur organic coat and used for fastening the base rail to the sheathing board/timber frame substrate
- self-drilling TKR Range Screws(1) — 4.8 mm diameter insulation anchors made of case-hardened carbon steel, with a Climadur organic coat and used with a 60 mm diameter Bravoll TIT fixing plate (plate of 0.9 $kN \cdot mm^{-1}$ stiffness) with a central hole to accommodate a screw of adequate length to suit the insulation thickness. Used for fastening the insulation to the timber battens or steel spacer rails (see section 1.1.5)

(1) Other fixings may be used provided they can be demonstrated to have equal or higher pull-out, and where relevant plate diameter and plate stiffness characteristics.

Basecoat

- Heck K+A Basecoat — a cementitious, ready mixed render, and supplied as a powder requiring the addition of 6 to 6.5 litres of clean water per bag. Applied in two layers to achieve a minimum thickness of 6 mm, with a coverage of 8 kg·m^{-2}

Reinforcement

- reinforcing mesh — a premium alkali resistant scrim cloth reinforcing mesh, a 1 m wide mesh (grid size 3.5 by 3.8 mm) of multi-stranded, alkali-resistant glass fibre with a polymer and a nominal weight of 160 g·m^{-2}

Primer

- Wetherby Silicone Primer — a silicone primer emulsion, used as a bonding agent and pre-coat, with a coverage rate of 0.2 to 0.3 litre per m^2

Finishes

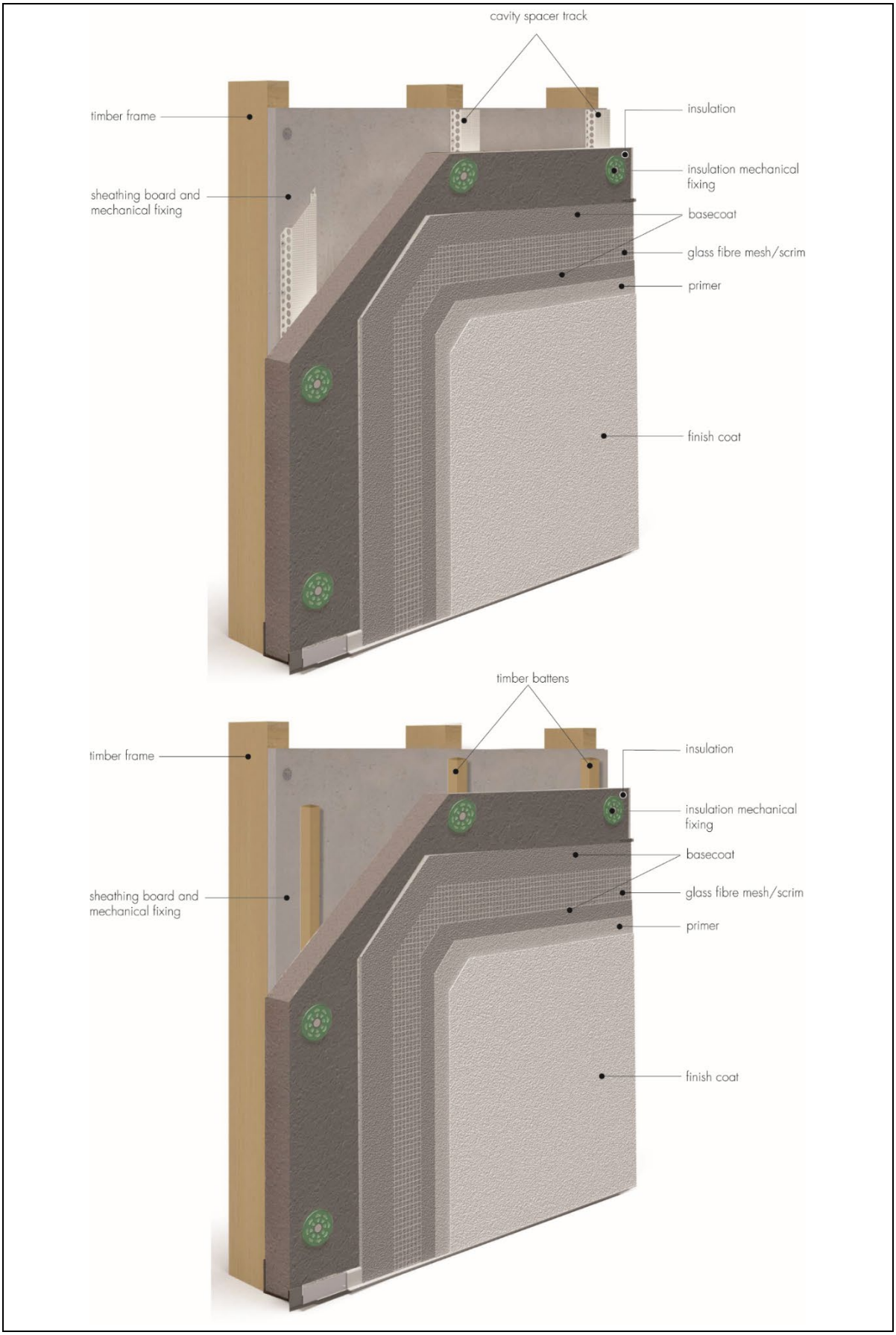
- Heck SHP Siliconharzputz K and Heck Siliconharzputz R render topcoats — silicone ready mixed renders supplied as pastes, with 1.0 to 3 mm particle sizes and a coverage of 2 to 2.4 kg·m^{-2}. If necessary, water can be added to adjust the consistency.

Ancillary items

The Certificate holder recommends the following ancillary items for use with the system, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- aluminium edge profile, PVC-U nosing and corner profile with mesh and, and render stop profile
- timber battens
- profile connectors and fixings
- bedding adhesive – to fix the insulation around window reveals and openings.
- timber frame sheathed construction, including the exterior grade sheathing board
- fixings for timber battens
- fixings for sheathing boards
- breather membrane
- insect mesh
- cavity fire stops
- cavity fire stops (intumescent strips)
- joint sealant
- polyurethane foam filler JPA
- aluminium or PVC-U movement joint
- aluminium or PVC-U expansion joint
- water drainage deflector channels (for use above openings).

Figure 1 The Epsitec External Wall Insulation System for Timber Framed Buildings using steel spacer rails (top-hat sections) or timber battens



Product assessment – key factors

The system was assessed for the following key factors, and the outcomes of the assessments are shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Data were assessed for the following characteristics.

1.1 Wind loading

1.1.1 Bond strength – the bond resistance between the insulation and render interface derived from test results must be taken as the value given in Table 1. The design resistance of the bond between the insulation and render (N_{RD1}) must be taken as the bond resistance divided by a partial factor of 9.

Table 1 Bond strength

System assessed	Assessment method	Requirement	Result
Epsitec External Wall Insulation System for Timber Framed Buildings	ETAG 004 : 2013, clause 6.1.4.1.3	To be at least 80 kPa with cohesive or adhesive rupture or the rupture occurs in the thermal insulation product (100% cohesive rupture) if resistance is lower than 80 kPa	Pass

1.1.2 Pull out resistance – typical characteristic pull-out resistances for the fixings are dependent on the fixing type and must be selected to suit the specific loads and substrate concerned. In situations where suitable(1) data does not exist, the characteristic pull-out resistance must be established from site-specific pull-out tests conducted on the substrate of the building to ascertain the minimum resistance to pull-out failure of the fixings, and determined in accordance with the guidance given in EOTA TR051 (minimum test characteristic value = 0.6 x mean of 5 lowest test results). To obtain the design pull-out resistance of the fixings (N_{RD2}), this characteristic pull-out resistance must then be divided by the partial factor.

(1) To qualify as suitable data, the age and condition of the substrate must be equivalent to that used to establish the values in the datasheets.

1.1.3 Displacement test – the system was tested to confirm its suitability when using the maximum EPS insulation thickness of 240 mm of minimum stiffness, heaviest insulation and render product and by adopting the fixing pattern with minimum number of 6 fixings using insulation fixing type self-drilling TKR Range Screws with a 60 mm diameter Bravoll TIT fixing plate. It is essential that seals and interfaces with the render product are designed and detailed to accommodate vertical displacement.

Table 2 Displacement test

System assessed	Assessment method	Requirement	Result
Epsitec External Wall Insulation System for Timber Framed Buildings (as described in section 1.1.3)	BBA test method based on EAD 040083-00-0404 : 2018	Displacement less than 10 mm	Pass

1.1.4 The number and spacing of the fixings must be determined by the Certificate holder. The number of fixings must not be less than the minimum specified for the system and the fixings must be symmetrically positioned and evenly distributed about the centre of the slab both vertically and horizontally except at openings and building corners.

1.1.5 The data obtained from sections 1.1.1 and 1.1.2 must be assessed against the design wind load and the following expression must be satisfied:

For safe design:

$Rd \geq W_e$

$Rd_{b.ins/rend} = A_r * N_{RD1}$
$Rd_{pull\text{-}out} = n * N_{RD2}$
$Rd_{pull\text{-}through} = (N_{RD3panel} * n_{panel}) + (N_{RD3joint} * n_{joint})/A_{slab}$

Where:

Rd	is the design ultimate resistance ($kN \cdot m^{-2}$) taken as the minimum of $Rd_{b.ins/rend}$, $Rd_{pull\text{-}out}$ and $Rd_{pull\text{-}through}$
W_e	is the applied ultimate wind load ($kN \cdot m^{-2}$)
$Rd_{b.ins/rend}$	is the design bond resistance between the insulation and render ($kN \cdot m^{-2}$)
$Rd_{pull\text{-}out}$	is the design pull-out resistance of the insulation fixings per metre square ($kN \cdot m^{-2}$)
$Rd_{pull\text{-}through}$	is the design pull-through resistance of the insulation fixings per metre square ($kN \cdot m^{-2}$)
A_r	is the reinforced basecoat bond area (based on % area covered)
N_{RD1}	is the design adhesive bond resistance between the insulation and render, based on test ($kN \cdot m^{-2}$)
n	is the number of anchor fixings per m^2
N_{RD2}	is the design pull-out resistance per fixing based on test (kN)
$N_{Rd3panel}$	is the design pull-through resistance per anchor not placed at the panel joint, based on test (kN)
$N_{Rd3joint}$	is the design pull-through resistance per anchor placed at the panel joint, based on test (kN)
n_{panel}	is the number of internal anchors in a panel
n_{joint}	is the number of joint anchors in a panel
A_{slab}	is the area of the slab (m^2).

1.1.6 A dynamic wind uplift test was carried out on a sheathed timber frame building and the system installed with vertical steel spacer rails at 600 mm horizontal spacing; the spacer rails were fastened to 11 mm thick OSB board (providing a minimum 15 mm cavity), with screws at maximum 300 mm vertical centres in both flanges. Insulations, 60 mm thick was fastened to the vertical profiles with insulation anchors, with the layout and spacing (see Annex A of this Certificate). The maximum design negative wind load that can be sustained by this configuration determined from the dynamic wind uplift test (Rd_{Test}) is equal to 2.75 $kN \cdot m^{-2}$ (1)(2).

(1) The maximum design wind load that can be resisted by the system corresponds to the maximum allowed spacing and centres of fixings and profiles and as described in section 1.1.6. This fixing and profile configuration with appropriately selected fixings will also adequately transfer the system's self-weight, wind and impact loads to a suitable substrate wall.
(2) The characteristic resistance value (N_{RK2}) determined from dynamic wind uplift test is 4.120 $kN \cdot m^{-2}$. The design wind load resistance is determined by dividing the characteristic resistance value by a partial safety factor of 2.5.

1.1.7 For a system including timber battens, if the spacing of the fixings and vertical timber battens are identical to those described in 1.1.6 the same maximum design negative wind load resistance (Rd_{Test} = 2.75 $kN \cdot m^{-2}$) can be used. Fixings must be positioned centrally along the line of the timber battens.

1.1.8 The horizontal local deflection of the supporting structure due to variable loads must be within acceptable limits. The limit for the maximum horizontal local deflection is the height of the storey/500, in accordance with the UK National Annex to BS EN 1995-1-1 : 2004. The Certificate holder may advise on the limiting deflection for the system, but such advice is outside of the scope of this Certificate.

1.1.9 The insulation system must be mechanically fixed to the timber battens or steel spacer rails with a minimum of six fixings per slab or approximately eight fixings per metre square, as per the fixing pattern shown in Figure 3. Additional fixings may be required, depending on the results of the calculations detailed above for the specific site.

1.2 Resistance to impact

1.2.1 Hard body impact tests were carried out in accordance with ETAG 004 : 2013. On the basis of the data assessed, the system is suitable for use in the Use Categories up to and including those specified in Table 4 of this Certificate. The system is suitable for use in all Use Categories(1).

Table 3 Hard body impacts

System assessed	Assessment method	Requirement	Result
Epsitec External Wall Insulation System for Timber Framed Buildings	ETAG 004 : 2013	ETAG 004 : 2013, clause 5.1.3.3	Categories I, II and III

(1) The Use Categories are defined in ETAG 004 : 2013 as:

- Category I — a zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use
- Category II — a zone liable to impacts from thrown or kicked objects, but in public locations where the height of the system will limit the size of the impact; or at lower levels where access to the building is primarily to those with some incentive to exercise care
- Category III — a zone not likely to be damaged by normal impacts caused by people or by thrown or kicked objects.

2 Safety in case of fire

Data were assessed for the following characteristics.

2.1 Reaction to fire

2.1.1 The system can achieve the reaction to fire classification given in Table 4. The classification and permissible areas of use of other constructions should be established in accordance with the documents supporting the national Building Regulations.

Table 4 Reaction to fire classification

System assessed	Assessment method	Classification report	Result
Substrate - any Class D-s2, d0 or better, > 9 mm thick and density > 340 kg·m^{-3} Support - Timber battens 25 mm thick or metal rails Insulation - EPS up to 150 mm thick Basecoat - Heck K+A basecoat Reinforcement - reinforcing mesh Primer - Wetherby Silicone primer Topcoat - Heck SHP Siliconharzputz K and Heck Siliconharzputz R render (white)	BS EN 13501-1 : 2007	Exova Warringtonfire report WF 407100(1)	B-s1, d0

(1) Copies of the report are available from the Certificate holder.

2.1.2 EPS insulation in isolation has an E reaction to fire classification to BS EN 13501-1 : 2007.

2.1.3 In England, constructions achieving B-s1, d0 in Table 4 must not be used on buildings with a storey 18 m or more in height or on residential buildings that are more than 11 m in height.

2.1.4 In Wales and Northern Ireland, constructions achieving B-s1, d0 in Table 4 must not be used on buildings with a storey 18 m or more in height.

2.1.5 In Scotland, constructions achieving B-s1, d0 in Table 4 must not be used on buildings with a storey 11 m or more in height or 1 m or less from a boundary or on some entertainment, assembly, hospital and residential care buildings. These constructions must also be included in calculations of unprotected area.

2.1.6 For application to second storey walls and above, the designer must consider at least one stainless steel fixing per square metre and fire barriers in line with compartment walls and floors, as given in BRE Report BR 135 : 2013.

2.1.7 *NHBC Standards* 2023 require in all cases that a minimum of one non-combustible fixing through the reinforcement mesh, per square metre or per insulation board, whichever provides the greater number, should be provided, in addition to the other fixings.

2.1.8 Designers must refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall wall construction.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Water vapour permeability

3.1.1 The water vapour resistance factor (μ) for the insulation and the water vapour diffusion-equivalent air layer thickness (s_d) of the reinforced basecoat applied with a finish coat are shown in Table 5.

Table 5 Water vapour resistance factors and equivalent air layer thickness

Product assessed	Assessment method	Requirement	Result	
			s_d (m)	(μ)
Layers: EPS 70E Epsitherm and EPS 70 white insulation	BS EN 13163 : 2012	declared	–	20 – 40(1)
EPS 90E Epsitherm insulation		declared	–	30 – 70(1)
Rendering product: Basecoat + Primer + finishing coat, as indicated below:				
Heck K+A Basecoat + Heck Siliconharputz K render topcoat(2)	Evaluation report 45578.04	declared	1	–
Heck K+A Basecoat + Heck Siliconharputz R render topcoat(2)		declared	1	–

(1) Values obtained from BS EN ISO 10456 : 2007, Table 4. It is recommended that the lower figure is used when assessing the interstitial condensation risk analysis.
(2) The quoted figure is based on the minimum thickness of each layer.

3.2 Condensation

The BBA has assessed the systems for the risk of interstitial condensation, and the following must be implemented.

3.2.1 Designers must ensure that an appropriate condensation risk analysis has been carried out for all parts of the construction, including openings and penetrations at junctions between the insulation product and windows, to minimise the risk of condensation. The recommendations of BS 5250 : 2021 must be followed.

3.2.2 Walls incorporating the system will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2021, and section 3.1 of this Certificate.

4 Safety and accessibility in use

Not applicable

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal conductivity

6.1.1 Calculations of the thermal transmittance (U value) must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019, using the declared thermal conductivity (λ_D value) given in Table 6 of this Certificate.

Table 6 Declared thermal conductivity of the insulation (λ_D)

System assessed	Thickness (mm)	Result
		λ_D value ($W \cdot m^{-1} \cdot K^{-1}$)
EPS 70 white	60 – 240	0.038
Epsitherm 70E		0.031
Epsitherm 90E		0.030

6.2 Thermal performance

6.2.1 The U value of a wall construction will depend on the selected insulation type and thickness, the degree of ventilation to the cavity, the fixing method and the insulating value of the substrate and its internal finish. Example U values for a timber framed construction with a slightly ventilated cavity are given in Table 7.

Table 7 Insulation thickness required to achieve some typical design U values(1)(2)

U value ($W \cdot m^{-2} \cdot K^{-1}$)	EPS 70 insulation thickness (mm)	Epsitherm 70E insulation thickness (mm)	Epsitherm 90E insulation thickness (mm)
0.13	–(2)	–(2)	–(2)
0.15	–(2)	240	240
0.17	–(2)	230	210
0.21	200	170	160
0.26	150	130	120
0.28	140	120	110
0.30	120	110	100

(1) Wall construction; 15 mm plasterboard (λ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$), 100 mm air cavity bridged by 15% by timber (λ = 0.13 $W \cdot m^{-1} \cdot K^{-1}$), 10 mm CPB board ($\lambda$ = 0.25 $W \cdot m^{-1} \cdot K^{-1}$), 15 mm drained slightly ventilated air cavity with a maximum ventilation 558.5 mm^2 per metre of length (in the horizontal direction) for vertical air layer of the wall bridged by 0.23 % steel spacer rails (λ = 0.088 $W \cdot m^{-1} \cdot K^{-1}$) .

(2) Declared thermal conductivity values (λ_D) of insulation are as shown in Table 6, Based upon incremental insulation thicknesses of 10 mm. 8.3 galvanized steel fixings per m^2 with a point thermal transmittance (XP) of 0.004 $W \cdot K^{-1}$ per pin and 8 mm render (λ = 1 $W \cdot m^{-1} \cdot K^{-1}$). See section 9.1.2 of this Certificate.

7 Sustainable use of natural resources

Not applicable.

8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in this system were assessed.

8.2 Specific test data were assessed as shown in Table 8:

Table 8 Hygrothermal properties

System assessed	Assessment method	Requirement	Result
Epsitec External Wall Insulation System for Timber Framed Buildings	Hygrothermal test to EAD 040083-00-0404 : 2018, Section 2.2.6	No blistering or peeling off of any finishing coat No detachment of the rendering product No failure or cracking associated with joints between insulation boards No cracking allowing water penetration to the insulating layer	Pass

8.3 Service life

8.3.1 Under normal service conditions, the systems will have a service life of at least 30 years, provided any damage to the surface finish is repaired immediately and regular maintenance is undertaken, as described in section 9 of this Certificate.

8.3.2 Any render containing Portland cement may be subject to lime bloom. The occurrence of this may be reduced by avoiding application in adverse weather conditions. The effect is transient and is less noticeable on lighter colours.

8.3.3 The renders may become discoloured with time, the rate depending on the initial colour, the degree of exposure and atmospheric pollution, as well as the design and detailing of the wall. In common with traditional renders, discoloration by algae and lichens may occur in wet areas. The appearance may be restored by a suitable power wash, fungicidal treatment or, if required, by over coating, provided the coating does not adversely affect the water vapour transmission or fire characteristics of the systems. The advice of the Certificate holder must be sought as to the suitability of a particular product, but such advice is outside the scope of this Certificate.

8.3.4 To maintain a high quality aesthetic appearance, it may be necessary to periodically overcoat the render (see section 8.3.3 of this Certificate).

PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

The design process was assessed, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

General

9.1.1 It is essential that the detailing techniques specified in this Certificate are carried out to a high standard if the ingress of water into the insulation is to be avoided and the full thermal benefit obtained from treatment with the system (eg the insulation must be protected by an overhang, and window sills must be designed and installed so as to direct water away from the building).

9.1.2 For improved thermal/carbon-emissions performance, the designer must consider additional/alternative fabric and/or services measures.

9.1.3 New walls subject to the national Building Regulations should be constructed in accordance with the relevant recommendations of:

- BS EN 1995-1-1 : 2005 and its UK National Annex
- BS EN 1995-1-2 : 2005 and its UK National Annex
- BS 8000-0 : 2014
- BS EN 10346 : 2015

- BS EN 634-2 : 2007
- BS EN 300 : 2006.

9.1.4 New walls not subject to regulatory requirements must also be built in accordance with the Standards identified in section 9.1.1.3.

9.1.5 Movement joints must be incorporated into the system in line with existing movement joints in the building structure and in accordance with the Certificate holder's recommendations for the specific installation.

9.1.6 The designer should select a construction appropriate to the local wind-driven rain index, paying due regard to the design detailing, workmanship and materials to be used.

9.1.7 The sheathing board must be of a suitable exterior grade with appropriately sealed joints, sealed penetrations, breather membrane and vapour control layers (VCL) where required.

9.1.8 The system must provide a minimum of 25 mm cavity when using timber battens or a minimum of 15 mm cavity(1)(2) when using steel spacer rails between the sheathing board and the insulation boards. Openings in the base rail profiles provides a ventilation rate of less than 500 mm^2 per metre of wall length (in the horizontal direction) for vertical air layers which will, therefore, not affect the thermal performance of the insulation product. The openings must be kept clean and free of obstructions and must be capable of draining freely.

(1) Horizontal deflection channels which obstruct the cavity must not be used to support the insulating render product.
(2) Cavities must not contain electrical cables other than meter tails.

9.1.9 The design of the structural frame of the building, including the sheathing boards, is the responsibility of the building designer and is outside the scope of this Certificate. However, the structural frame (and sheathing-associated fixings) must be structurally adequate and must be designed to resist all permanent and variable load actions applied to the system (see Table 8 for the non-exhaustive minimum specifications for system installations relating to the light gauge steel and sheathing).

Table 9 Minimum timber frame construction requirements

Item	Characteristic	Specification
Timber framed structure(1)	The timber structure should be at least 37 mm wide, with a minimum depth of 72 mm or 0.026 times the board height in mm, whichever is greater	In accordance with BS EN 338-1-1 : 2009 and BS EN 14081-1 : 2005 and dry graded and marked in accordance with BS 4978 : 2007.
Sheathing board(1)(2)	CPB Minimum 12 mm thickness	The board must be manufactured to BS EN 12467 : 2012 , Class 2
	OSB Minimum 11 mm thickness	The board must be manufactured to BS EN 300 :2006, Class 3
	Plywood Minimum 11 mm thickness	The board must be manufactured to BS EN 636:2012 minimum Service Class 2

(1) These components are outside the scope of this Certificate.
(2) The board must be of an exterior grade, with the minimum acceptable specification as indicated in Table 2.

9.1.10 The effect of the system on the acoustic performance of a construction is outside the scope of this Certificate.

9.1.11 The fixing of sanitary pipework, plumbing, rainwater goods, satellite dishes, clothes lines, hanging baskets and similar items to the system is outside the scope of this Certificate.

9.1.12 External pipework and ducts must be removed before installation, and alterations made to underground drainage to accommodate repositioning of the pipework to the finished face of the system. The Certificate holder can advise on suitable fixing methods, but such advice is outside of the scope of this Certificate.

9.1.13 The detailed provisions given in the documents supporting the national Building Regulations when the system is installed in close proximity to certain flue pipes and/or heat-producing appliances must be followed.

Surface condensation

9.1.14 In England and Wales, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 $W \cdot m^{-2} \cdot K^{-1}$ at any point and the junctions with other elements and openings comply with section 6.2.2 of this Certificate.

9.1.15 In Scotland, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 1.2 $W \cdot m^{-2} \cdot K^{-1}$ at any point.

Resistance to weather

9.1.16 The system will provide a degree of protection against rain ingress. However, care must be taken to ensure that walls are adequately weathertight prior to its application. It may only be installed where there are no signs of dampness on the inner surface of the substrate other than those caused solely by condensation.

9.1.17 Designers and installers should take particular care in detailing around openings, penetrations and movement joints to minimise the risk of rain ingress. Only details approved by the Certificate holder should be used.

9.1.18 The guidance given in BRE Report BR 262 : 2002 must be followed in connection with the weathertightness of wall constructions.

9.1.19 At the tops of walls, the system must be protected by an adequate overhang or other detail designed for use with this type of system (see Figure 11). On flat roofs and parapet walls, waterproofing and drainage must be adequate and in good condition.

Structural performance

9.1.20 The Certificate holder is ultimately responsible for the design of the system, and it is the responsibility of the company installing the system to accurately follow the installation instructions. The Certificate holder must also verify that a suitably experienced and qualified individual (with adequate professional indemnity) establishes that:

- the wind loads on the different zones of the building's elevation for the specific geographical location have been calculated correctly (see section 9.19)
- the system can adequately resist and safely transfer the calculated loads, accounting for all possible failure modes, to the substrate wall and supporting structure (see sections 9.1.19 to 9.1.22 of this Certificate).

9.1.21 The substrate and supporting structure must be capable of transferring all additional loading due to the installation of the system to the ground in a satisfactory manner. The adequacy of the substrate and supporting structure must be verified by the person or party responsible for the global stability of the building to which the system is applied. Any defects must be made good prior to the system being installed.

9.1.22 The wind loads on the walls must be calculated, taking into account all relevant factors such as location and topography, in accordance with BS EN 1991-1-4 : 2005 and its UK National Annex. All the factors affecting wind load on each elevation and specific zone of the building must be considered. In accordance with BS EN 1990 : 2002 and its UK National Annex, a partial factor of 1.5 must be applied to the characteristic values determined from BS EN 1991-1-4 : 2005 to establish the design wind load to be resisted by the system.

9.1.23 Installations correctly designed in accordance with this Certificate will safely accommodate the applied loads due to the self-weight of the system, wind, and impact.

9.1.24 Positive wind load is transferred to the substrate wall directly via compression through the render, insulation, and steel spacer rail or timber battens.

9.1.25 Negative wind load is transferred to the substrate wall via[(1)]:

- the bond between the insulation and the render product
- the pull-out resistance of the insulation fixing from the steel spacer rail or timber battens
- the pull-through resistance of the insulation fixing
- the pull-through resistance of the steel spacer rail or timber batten fixing from the steel spacer rails or timber battens

- the pull-out resistance of the steel spacer rail or timber batten fixing from the substrate (see section 1of this Certificate).

(1) Further guidance is given in BBA Guidance Note 1, available on the BBA website (www.bbacerts.co.uk).

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance are provided in Annex A of this Certificate.

9.3 Workmanship

9.3.1 Practicability of installation was assessed on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, the systems must only be installed by Installers who have been trained and approved by the Certificate holder. Details of Approved Installers are available from the Certificate holder. Such an installer is a company:

- employing operatives who have been trained and approved by the Certificate holder to install the system
- which has undertaken to comply with the Certificate holder's application procedure, containing the requirement for each application team to include at least one member-operative trained by the Certificate holder
- subject to at least one inspection per annum by the Certificate holder to ensure suitable site practices are being employed. This may include unannounced site inspections.

9.4 Maintenance and repair

9.4.1 An initial inspection must be made within 12 months and regularly thereafter to include:

- visual inspection of the render for signs of damage. Cracks in the render exceeding 0.2 mm must be repaired
- examination of the sealant around openings and service entry points
- visual inspection of architectural details designed to shed water to confirm that they are performing properly
- visual inspection to ensure that water is not leaking from external downpipes or gutters; such leakage could penetrate the rendering
- necessary repairs effected immediately and any sealant joints at window and door frames replaced at regular intervals
- maintenance schedules, which should include the replacement and resealing of joints, for example between the insulation products and window and door frame.

9.4.2 Damaged areas must be repaired using the appropriate components and procedures detailed in the Certificate holder's installation instructions and in accordance with BS EN 13914-1 : 2016.

10 Manufacture

10.1 The production processes for the system have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and system testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate. an audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.1.5 The BBA has undertaken to review the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

11 Delivery and site handling

11.1 The Certificate holder stated that the system components are delivered to site in the packaging and quantities listed in Table 9. Each package carries the system identification and batch number.

Table 10 System component supply details

Component	Quantity and packaging
Insulation	polythene wrapped
Base rail	2500 mm lengths
Reinforcing scrim mesh	50 by 1 m rolls
Steel spacer rails	Banded together
Timber battens	Banded together
Basecoat	25 kg bags
Primer	23 kg tubs
Finishing coats	25 kg tubs
Mechanical fixings	boxed by manufacturer

11.2 Delivery and site handing must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 The insulation must be stored off the ground on a firm, clean, level base, protected from weather/frost, dry and under cover until required for use. Care must be taken during handling to avoid damage.

11.2.2 Additionally, the insulation must be protected from prolonged exposure to sunlight, any contact with solvents, bitumen and sources of ignition.

11.2.3 The basecoat must be stored in dry conditions within 5 and 30°C, off the ground and protected from moisture.

11.2.4 The primer and finish coat must be stored in a safe area, under cover and protected from excessive heat and frost.

11.2.5 Any contaminated material must be discarded.

ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the system but has not formed part of the material assessed for the Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

CLP Regulations

The Certificate holder has taken the responsibility of classifying and labelling the system components under the *GB CLP Regulation* and *CLP Regulation (EC) No 1272/2008 - classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Management Systems Certification for production

The management system of manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015, BS EN ISO 14001 : 2015 and BS ISO 45001 : 2018 by Alcumus ISOQAR (Certificates 16512-QMS-001, 16512-EMS-001 and 16512-OHS-001 respectively).

Additional information on installation

A.1 Site survey and preliminary work

A.1.1 A pre-installation survey of the property must be carried out to determine whether repairs are required to the sheathing board or timber frame and repairs should be carried out before application of the system. A specification is prepared for each elevation of the building indicating:

- cavity barriers
- the position of beads
- detailing around windows, doors and at eaves
- damp-proof course (DPC) level
- exact position of expansion joints, if required
- additional corner mesh and reinforcement, where required
- areas where flexible seal must be used
- any alterations to external plumbing, if required.

A.1.2 The survey must include tests conducted on the sheathed structural timber frame walls of the building by the Certificate holder or their approved applicators to determine the pull-out resistance of the proposed mechanical fixings. An assessment and recommendation are made on the type and number of fixings required to withstand the building's expected wind loading based on calculations using the relevant wind speed data for the site and the pull-out resistances (see section 1).

A.1.3 Surfaces should be sound, clean, and free from loose material. The flatness of surfaces must be checked; this may be achieved by using a straight edge spanning the storey height. Excessive irregularities, ie greater than 10 mm, must be made good prior to installation to ensure that the timber frames are installed with a smooth, in-plane finished surface.

A.1.4 On existing buildings, purpose-made windowsills must be fitted to extend beyond the finished face of the system. New buildings should incorporate suitably deep sills.

A.1.5 Internal wet work, eg screeding or plastering, should be completed, and allowed to dry prior to the application of a system.

A.1.6 All modifications, such as provision for fire stopping and necessary repairs to the building must be completed before installation commences.

A.2 Installation

A.2.1 Installation must be in accordance with the Certificate holder's instructions and this Certificate.

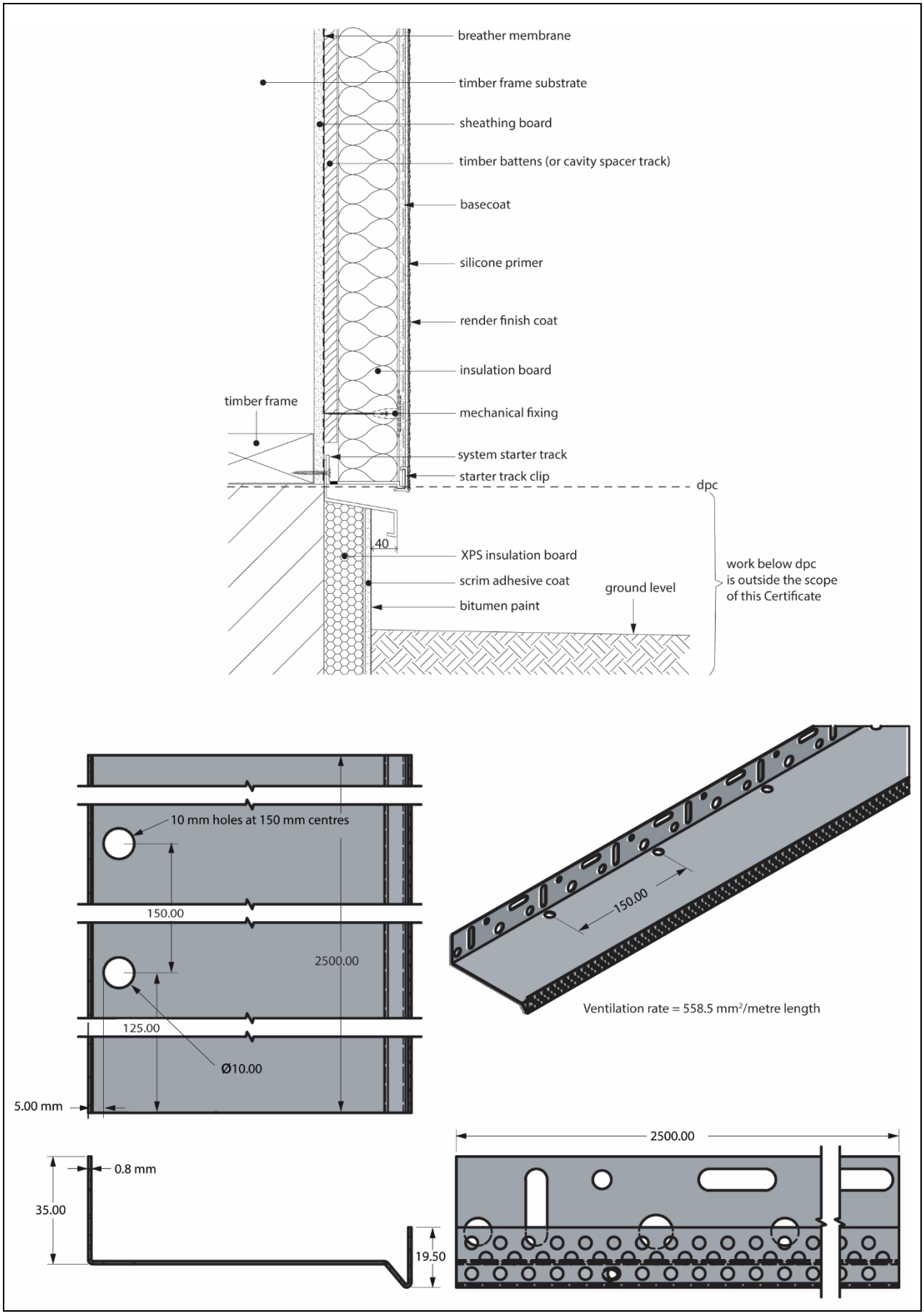
A.2.2 Weather conditions should be monitored to ensure correct application and curing conditions. Application of coating materials must not be carried out at temperatures below 5°C, above 30°C, or if exposure to frost is likely, and the coating must be protected from rapid drying.

A.2.3 All rendering should be in accordance with the relevant recommendations of BS EN 13914-1 : 2016. The render must be protected from rapid drying and should not be applied on elevations in direct sunlight or where the substrate is hot.

Positioning and securing insulation boards

A.2.4 The base rail is mechanically fixed and secured to the sheathing board above the DPC using profile fixings. See Figure 2.

Figure 2 Typical section of base rail



A.2.5 Vertical steel spacer rails or timber battens are mechanically fixed at maximum 600 mm horizontal centres to the sheathing board at a maximum of 300 mm centres either side of the rail. Rails may need packing to ensure they are true to line and level. Drainage-deflection channels are mechanically fixed over all window and door openings, and horizontal and vertical intumescent strips that accommodate cavity thickness are installed following the designer's instructions.

A.2.6 The first insulation board is positioned on the base rail and secured into the cavity spacer track using a self-drilling, self-tapping fastening. Subsequent boards are positioned so that the joints are staggered and overlapped at the building corners (see Figures 4 and 6). Care must be taken to ensure the fixings are not overdriven. Fire barriers must be installed following the designer's instructions.

Figure 3 Arrangement of insulation boards and typical fixing pattern

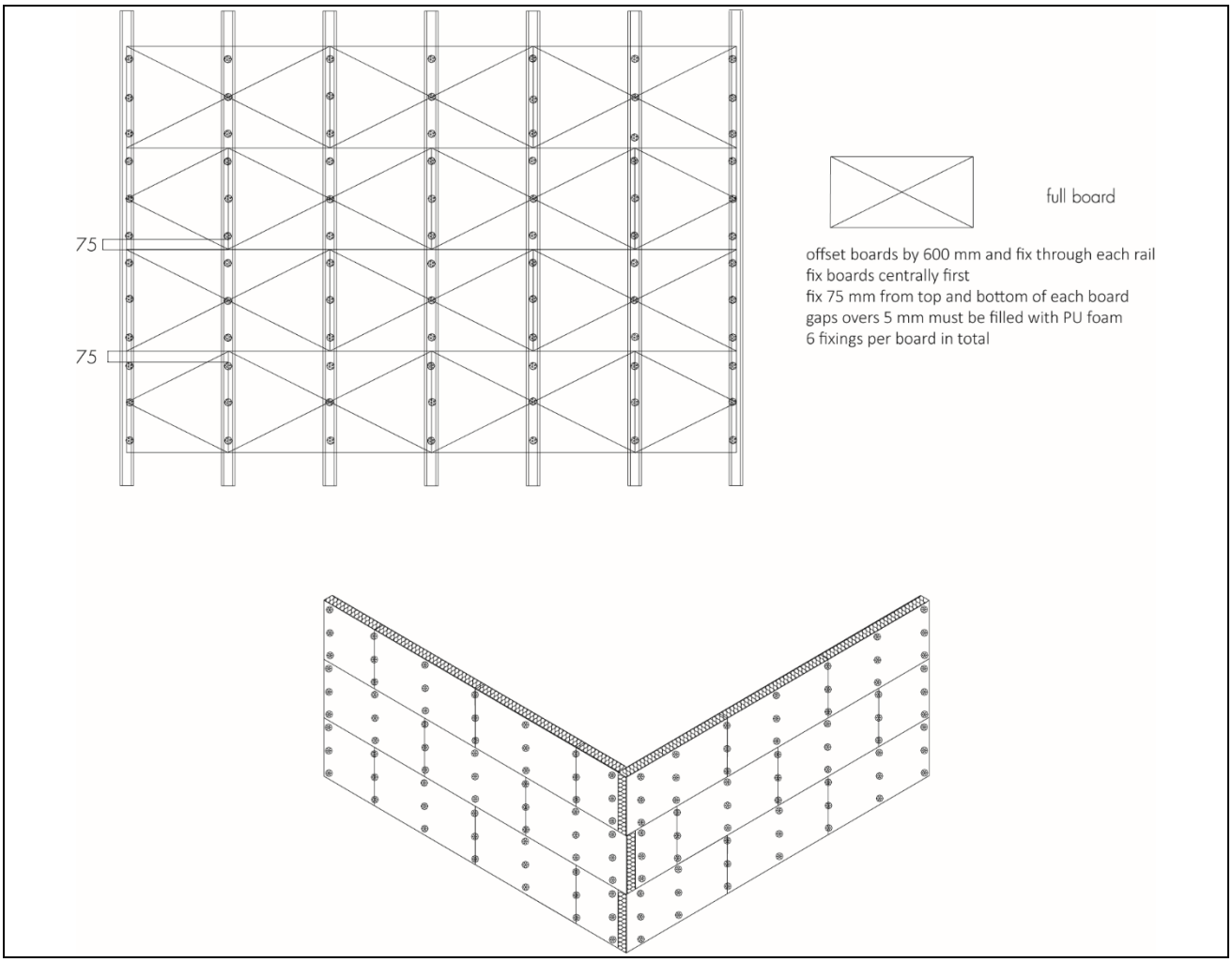


Figure 4 Typical corner detail

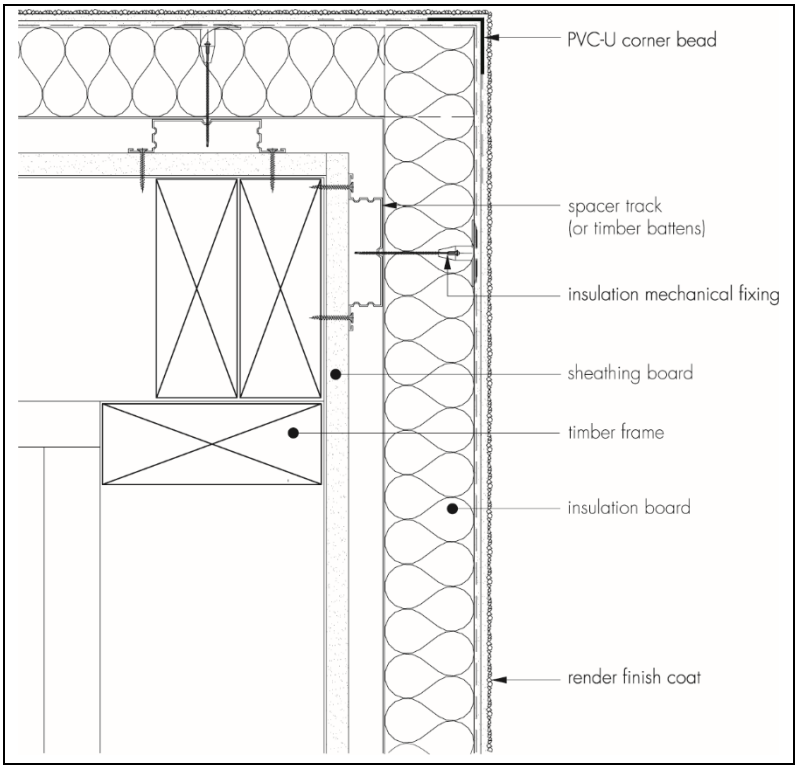
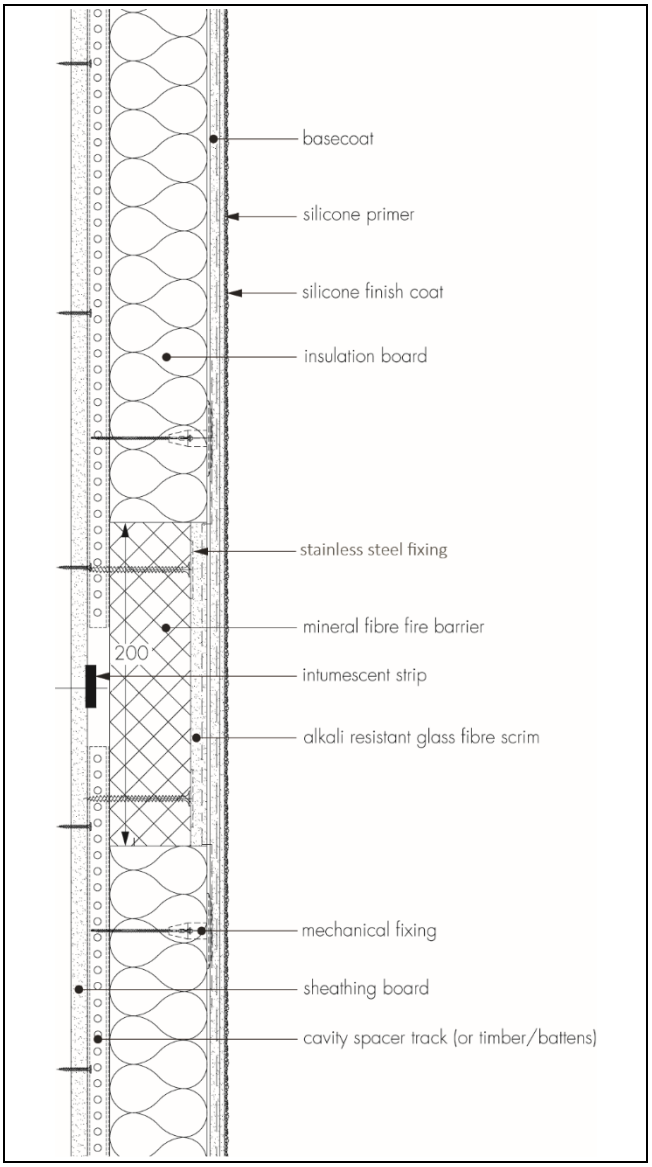


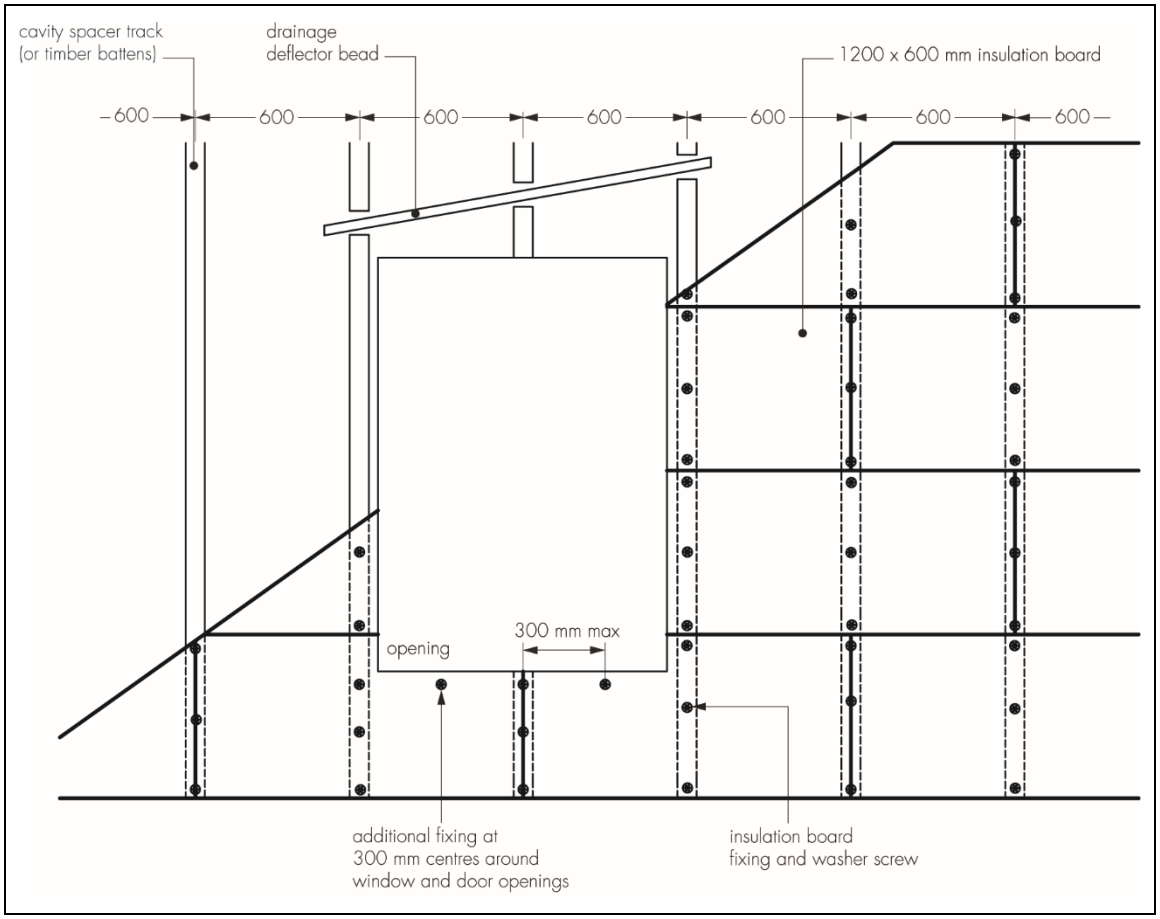
Figure 5 Fire barriers



A.2.7 Care must be taken to ensure that all insulation board edges are butted tightly together, and alignment is checked as work proceeds. The surface of the boards should be smooth without high spots or irregularities.

A.2.8 To fit around details such as doors and windows, insulation boards may be cut with a sharp knife or a fine-tooth saw. Purpose-made windowsills, seals and deflection channels are fitted (see Figure 6), which are designed to prevent or manage water ingress and allow water to be shed clear of items bridging the cavity.

Figure 6 Typical opening details showing deflection channel



A.2.9 Installation continues until the substrate is completely covered including, where appropriate, the building soffits.

Movement joints

A.2.10 The system incorporates provision for movement joints (see Figure 7).

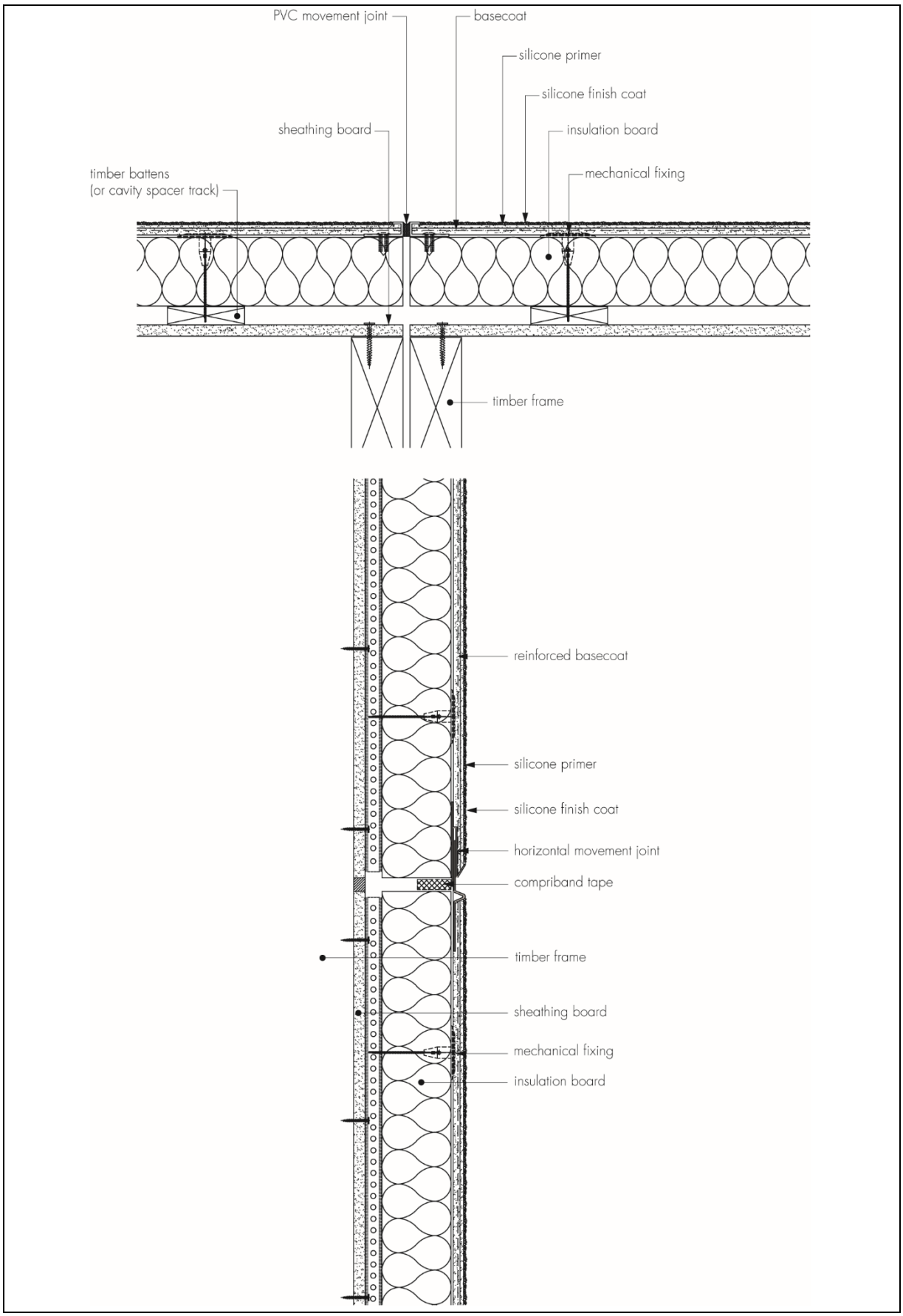
A.2.11 Expansion beads are fixed horizontally and vertically in predetermined positions, according to the installation specification and the individual requirements of each project.

A.2.12 Surface-mounted PVC render beads are fixed with firtree fixings to the insulation boards where required.

Reinforcing, rendering and finishing

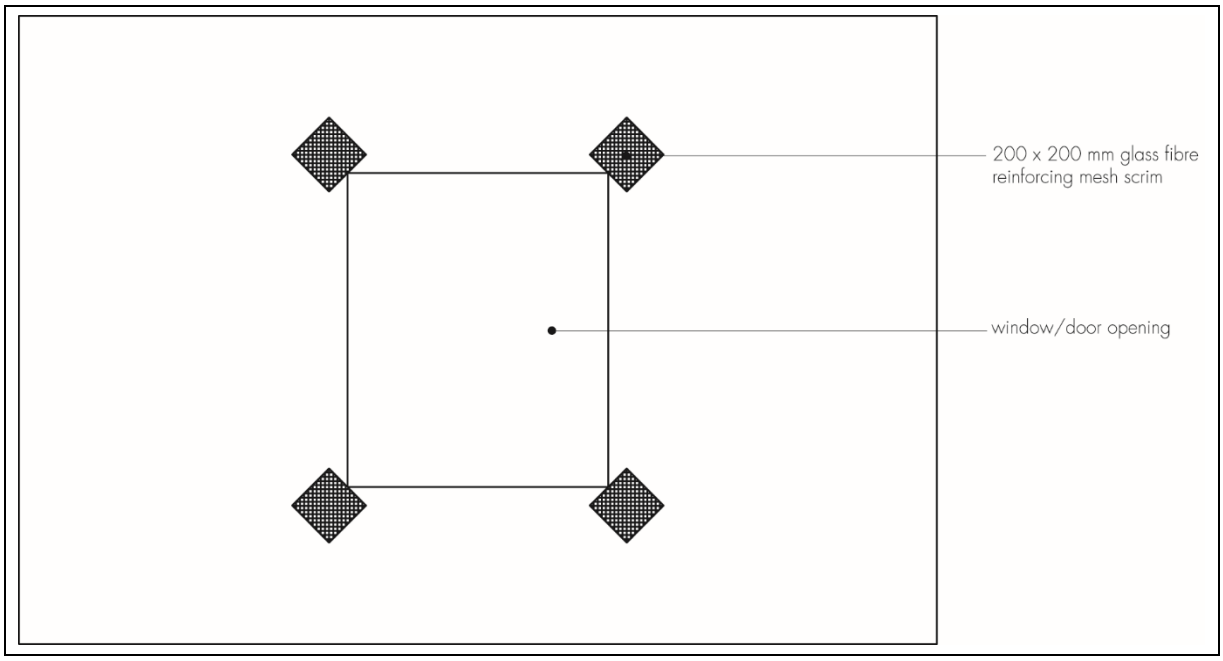
A.2.13 Heck K+A Basecoat render is prepared by mixing the contents of each 25 kg bag with approximately 6 to 6.5 litres of cold, clean water, using a paddle mixer. Mixing time should be at least five minutes after the addition of the last bag of render, to allow an even dispersion of resins.

Figure 7 Vertical and horizontal movement joint details



A.2.14 The mixed basecoat render is trowel-applied to the surface of dry insulation boards to a thickness of 4 to 6 mm. The reinforcing mesh scrim is bedded into the basecoat with 100 mm laps at joints, ensuring all PVC wings of beading are overlapped with reinforcing mesh scrim. Additional reinforcement should be applied at the corners of windows and doors or similar openings, as shown in Figure 8.

Figure 8 Corner reinforcement



A.2.15 The PVC meshed corner beads are bedded into the basecoat at external corners and around openings as required.

A.2.16 The drying period of the basecoat will depend on weather conditions; however, once applied, it must be left to harden for at least one day before application of a further layer.

A.2.17 The second coat is applied to a thickness of between 2 and 3 mm and finished smooth.

A.2.18 Continuous surfaces should be completed without a break.

A.2.19 In buildings with second storey walls and above, holes are drilled at 1 m centres for additional fixings before the basecoat hardens, and stainless steel fixings are inserted through the reinforcing mesh scrim, insulation and into the substrate wall. Mesh scrim patches, 100 by 100 mm, are required over each stainless-steel fixing head.

A.2.20 When the basecoat render is dry, the primer coat is applied.

A.2.21 The topcoat is supplied ready-mixed in a tub and is lightly mixed and then trowel-applied in a continuous motion to a wet edge, to produce an even thickness appropriate to the grain size.

A.2.22 Prior to setting, the render is polished with a plastic float to give an even texture and to remove all trowel lines. Elevations should be completed in one application and finished to natural breaks in the render, ie beads or building corners. The texture should be checked to ensure the same batches are applied to each elevation; where necessary drums can be batch-mixed to ensure colour consistency.

A.2.23 Relevant seals are positioned and installed at all openings (for example, windows and doors), overhanging eaves, gas and electric meter boxes, and wall vents or where the render abuts any other building material or surface.

A.2.24 Care should be taken in the detailing of the system around such features as openings, projections and at eaves (see Figures 9 and 10), to ensure adequate protection against water ingress and to limit the risk of water penetrating the system.

A.2.25 On completion of the installation, external fittings, eg rainwater goods, are securely fixed to timber grounds or extended fixings that have been built into the system during installation.

Figure 9 Typical roof eaves detail

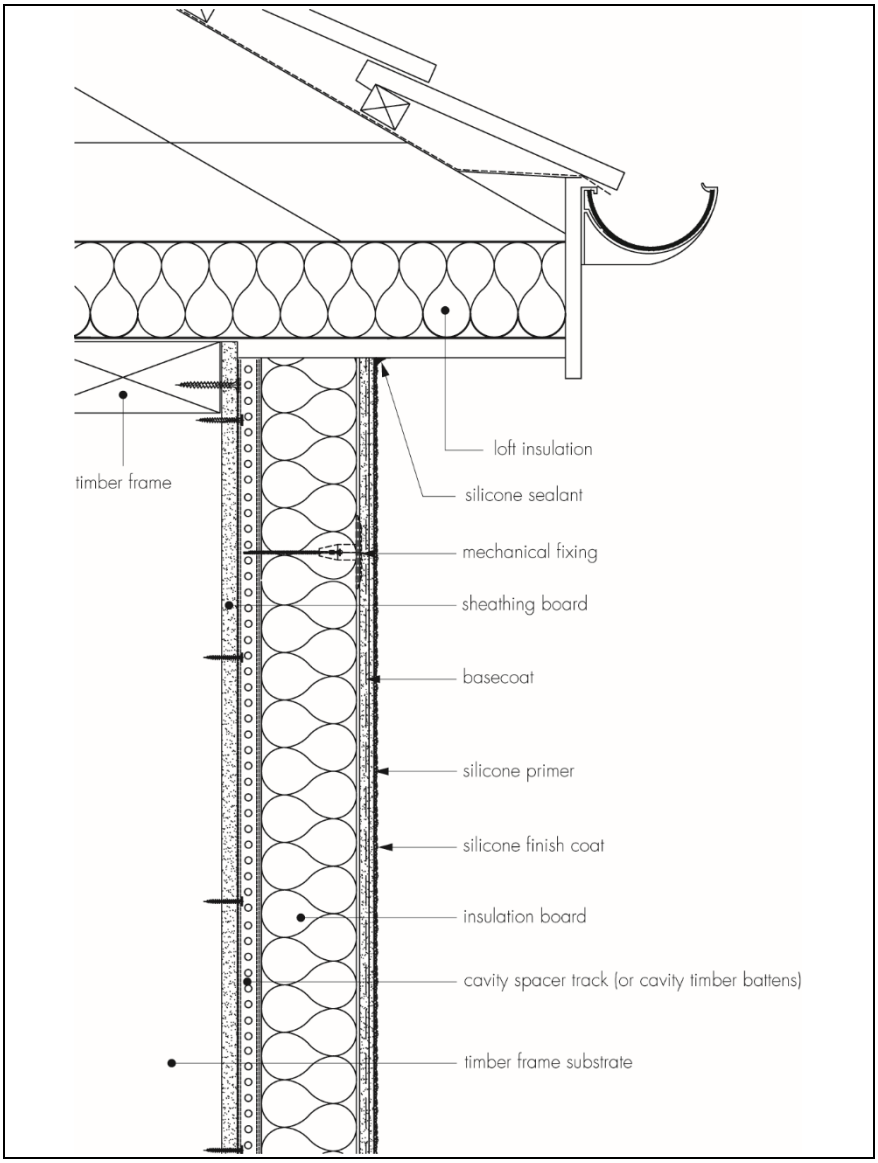
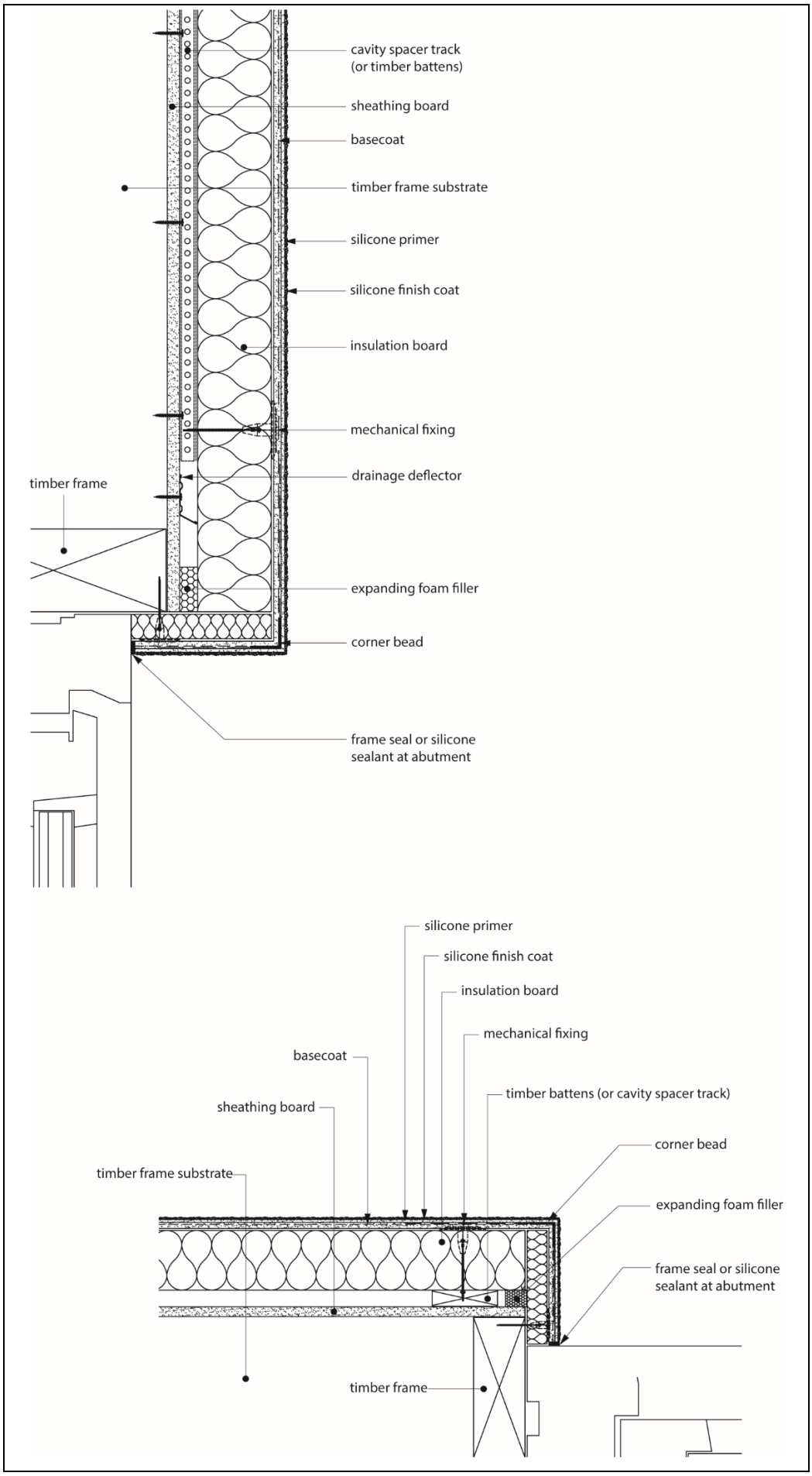

timber frame
loft insulation
silicone sealant
mechanical fixing
sheathing board
basecoat
silicone primer
silicone finish coat
insulation board
cavity spacer track (or cavity timber battens)
timber frame substrate

Figure 10 Typical window head and jamb details



Bibliography

BRE Report 135 BR 135 : 2013 *Fire performance of external thermal insulation for walls of multistorey buildings*

BRE Report 262 BR 262 : 2002 *Thermal insulation: avoiding risks*

BRE Report 443 BR 443 : 2019 *Conventions for U-value calculations*

BS EN 300 : 2006 *Oriented strand boards (OSB) — Definitions, classifications and specifications*

BS EN 636 : 2012 + A1 : 2015 *Plywood — Specifications*

BS 4978 : 2007 + A2 : 2017 *Visual strength grading of softwood — Specification*

BS 5250 : 2021 *Code of practice for control of condensation in buildings*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS EN 338-1-1 : 2009 *Structural timber — Strength classes*

BS EN 634-2 : 2007 *Cement bonded particleboards — Specification — Requirements for OPC bonded particleboards for use in dry, humid and exterior conditions*

BS EN 1062-1 : 2004 *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Classification*

BS EN 1990 : 2002 *Eurocode — Basis of structural design*
UK NA to BS EN 1990 : 2002 UK National Annex to *Eurocode — Basis of structural design*

BS EN 1991-1-4 : 2005 *Eurocode 1: Actions on structures — General actions — Wind actions*
UK NA to BS EN 1991-1-4 : 2005 UK National Annex to *Eurocode 1: Actions on structures — General actions — Wind actions*

BS EN 1995-1-1 : 2004 + A2 : 2014 *Eurocode 5 : Design of timber structures — General rules and rules for buildings*
UK NA to BS EN 1995-1-1 : 2014 *Eurocode 5 : Design of timber structures — General rules and rules for buildings*
BS EN 1995-1-2 : 2006 *Eurocode 5 : Design of timber structures — General — Stuctural fire design*
UK NA to BS EN 1995-1-2 : 2008 UK National Annex to *Eurocode 5 : Design of timber structures — General — Structural fire design*
NA to BS EN 1995-1-1 : 2004 UK National Annex to *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 12467 : 2012 + A2 : 2018 *Fibre-cement flat sheets — Product specification and tests methods*

BS EN 4978 : 2007 *Visual strength grading of softwood — Specification*

BS EN 10346 : 2015 *Continuously hot-dip coated steel flat products for cold forming — Technical delivery conditions*

BS EN 13163 : 2012 *Thermal insulation products for buildings — Factory made expanded polystyrene (EPS) products*

BS EN 13914-1 : 2016 *Design, preparation and application of external rendering and internal plastering — External rendering*

BS EN 14081-1 : 2005 *Timber structures — Strength graded structural timber with rectangular cross section — General requirements*

BS EN ISO 6946 : 2017 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

BS EN ISO 14001 : 2015 *Environmental management systems — Requirements with guidance for use*

BS EN ISO 10456 : 2007 *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*

BSISO 45001 : 2018 *Occupational health and safety management systems — Requirements with guidance for use*

EAD 040083-00-0404 : 2018 *External thermal insulation composite systems (ETICS) with renderings*

EOTA TR051 *Recommendations for job site tests of plastic anchors and screws*

ETAG 004 : 2013 *Guideline for European Technical Approval of External Thermal Insulation Composite Systems (ETICS) with Rendering*

SCI Publication P343 Insulated Render System Used With Light Steel Framing (Steel Construction Institute, 2006)

Conditions of Certificate

Conditions

1 This Certificate:

- relates only to the system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the system or any other system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the system
- actual installations of the system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA marking and CE marking.

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this system which is contained or referred to in this Certificate is the minimum required to be met when the system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.